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10/518,636	09/13/2005	Christoph Baumhof	BAUMHOF I	4945
<div>1444 7590 08/20/2008 BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, NW SUITE 300 WASHINGTON, DC 20001-5303</div>				
EXAMINER				
PULLIAM, CHRISTYANN R				
ART UNIT		PAPER NUMBER		
2165				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,636

Applicant(s)

BAUMHOF ET AL.

Examiner

Christyann RF Pulliam

Art Unit

2165

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Claim24 are pending as amended May 13, 2008. Claims 1-9 are cancelled. Claims 10-17 are currently amended. Claims 18-24 are new.
2. The amendments to the claims overcome the prior drawing objections and 112 rejections.
3. As necessitated by the amendments, new grounds of rejection are provided below. Therefore, this action is FINAL.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
5. Claims 10-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larner et al., U.S. Patent No. 6,104,638 (hereinafter Larner) in view of Sorenson et al., U.S. Patent No. 6,539,402 (hereinafter Sorenson).

As for Claim 10, Larner teaches:

A method for reconstructing administrative data records relating to a nonvolatile memory that can be written in units of sectors and erased in units of blocks, said administrative data records being stored in an internal volatile flag memory of an assigned memory controller (See e.g. Larner – Abstract), the method comprising the steps of:

setting up in one or more memory blocks of the nonvolatile memory a contiguous reconstruction table for administrative memory data (RKT) (See e.g. Larner - as parameters that are contiguously stored in nonvolatile memory containing an identification field with the first two bits of which specifying the length of the data field, and an optional second field specifying data field length, and the actual data field in column 2, lines 45 to 60, as stored in non-volatile memory. Each parameter representing a data record with two or three fields per record, and by contiguously storing the parameters thereby creating a table of records. This table is purposefully used in the advent of power failure to reconstruct in RAM: the locations of data in nonvolatile memory, or to reconstruct the locations of data in nonvolatile memory for recovery to RAM and the recovery of data to RAM. Furthermore Larner teaches that the data structure may incorporate the use of pointers or references and/or the use of a lookup/hash table in column 3, lines 54 to 64. This data structure would be used for reconstruction of information due to power failure),

continually updating the reconstruction table in the nonvolatile memory with administrative data records relating to all write and erase operations the internal volatile

flag memory (See e.g. Larner- as a parameter is updated or each time a new segment is written the parameter with its latest value is written to non-volatile memory in column 4, lines 16 to 18), the step of continually updating comprising recording all information with which the administrative data records of the internal volatile flag memory of the memory controller can be completely reconstructed during a restart after a power failure (See e.g. Larner - as each time a segment becomes full, or when a predetermined threshold is reached, the most recent values as stored in RAM are copied into an unused segment of non-volatile memory in column 4, lines 1 to 6, and as a parameter is updated or each time a new segment is written the parameter with its latest value is written to non-volatile memory in column 4, lines 16 to 18. These parameters are used to reconstruct in RAM the layout of the nonvolatile memory storage in column 4, lines 13 to 39),

starting a reconstruction when a predefined fill level of the reconstruction table (RKT) is reached to create a defined initial state of the administrative data records in the internal volatile flag memory and in the reconstruction table (RKT) (See e.g. Larner - as segments that contain reconstruction information for defining an initial state of memory become full or reach a predetermined threshold they are recycled, and updates of both written and erased data are reorganized and stored in a nonvolatile memory from column 3, line 66 to column 4, line 27 and col. 4, lines 40-65).

Larner does not expressly teach an OE and an FE. However, Sorenson teaches

recording the start of the reconstruction as a last entry (OE) in the reconstruction table (See e.g. Sorenson – col. 6, lines 8-25 – rollbacks in progress and col. 7, lines 8-20) and

recording a completion entry (FE) into the reconstruction table every time the reconstruction was successful (See e.g. Sorenson – col. 6, lines 8-25 – last P-SAVE).

Sorenson also teaches continuously updating records of transactions in an audit trail block in memory (See e.g. Sorenson – Figures 5B and 5C). Audit block is cleared when a P_SAVE is made (See e.g. col. 5, lines 35-60). Periodic P-SAVES are made based on programmer criteria including number of transactions in the audit trail (See e.g. Sorenson - col. 5, lines 45-55).

Larner and Sorenson are from the analogous art of data backup and reconstruction. It would have been obvious to one of ordinary skill in the art at the time the invention was made having the teachings of Larner and Sorenson to have combined Larner and Sorenson. The motivation to combine Larner and Sorenson is to provide further details about the backing up of data. Both provide reconstruction and recovery after a power failure. Both log all writes and erases of data to a special section of memory. Sorenson more fully describes the data written to non-volatile memory with its P-SAVES in addition to the audit trail records. It would have been obvious to one skilled in the art to combine Larner and Sorenson.

As for Claim 11, Larner as modified by Sorenson teaches parent Claim 10. Larner also teaches that every entry in the reconstruction table (RKT) is one sector or

one sector segment long (See e.g. Larner - as segments are written into flash memory, working with data structures in column 3, lines 59-62 and also details working with segments as for example in column 1, starting on line 47, "... segmented flash memory is used, in which individual segments can be erased," and on line 57, "When a new segment is written, the new segment is written using the values from RAM.").

As for Claim 12, Larner as modified by Sorenson teaches parent Claim 10. Larner also teaches further comprising a step of repeating the reconstruction of the administrative data records of the internal volatile flag memory if another power failure has occurred during the reconstruction of the data records (See e.g. Larner - as in the event of power failure provision is made to ensure that no data is lost during the transfer of data from one memory segment to another or during the writing of data in column 2, line 40 and from column 4, line 58 to column 5, line 22, where the recovery of RAM memory from nonvolatile memory is detailed) .

As for Claim 13, Larner as modified by Sorenson teaches parent Claim 10. Larner also teaches wherein the completion entry containing a counter (FZ), which is incremented with every completion entry (See e.g. Larner - as a reorganization counter in column 4, on lines 52 – 56 and the first entry (the counter) serves a dual purpose. In addition to counting, the first value of the segment is examined if the value is other than FFFF then the segment is complete and valid. In the event more than one segment contains an entry the lower segment is selected. These completion determinations are

based on the first entry in the table from column 4, line 64 to column 5, line 11. Note that the Applicant's specification also relies on the counter in the exact same way as Larner in the event of a power failure). Sorenson also teaches time stamps for P-SAVES and identifying information for previous save (See e.g. Sorenson- col. 6, lines 8-20).

As for Claim 14, Larner as modified by Sorenson teaches parent Claims 10 and 13. Larner also teaches further comprising for a renewed creation of the reconstruction table (RKT) after a successful reorganization, and releasing the previously used memory blocks for erasing in a background program and initializing the erased blocks accordingly (See e.g. Larner - as previously used memory blocks are erased and reused in column 4, lines 1-12, and that these memory areas are initialized as exemplified in column 2, lines 29-31). Sorenson also teaches deleting steps from the audit trail (See e.g. Sorenson – claim 20)

As for Claim 15, Larner as modified by Sorenson teaches parent Claims 10 and 13-14. Sorenson also teaches wherein the first entry in the reconstruction table (RKT) is a completion entry (FE) (See e.g. Sorenson – Figures 5B and 5C and col. 7, lines 4-7 - last P-SAVE is record in audit trail and starting point for recovery).

As for Claim 16, Larner as modified by Sorenson teaches parent Claim 10. Larner also teaches further comprising maintaining an intermediate point table (ZZT) as

a portion of the administrative data records, in the internal volatile flag memory for any invalid block pointers that are contained in a block pointer table (BZT) in the nonvolatile memory (See e.g. Larner - a memory map of known defective locations for specific segments is maintained as a record in non-volatile memory and also in RAM in column 6, lines 1-9 and the use of pointers to identify locations in non-volatile memory in column 3, lines 54 to 56).

As for Claim 17, Larner as modified by Sorenson teaches parent Claims 10 and 16. Larner also teaches wherein during the reconstruction, invalid block pointers in the block pointer table (BZT) are updated with the values of the intermediate point table (ZZT) (See e.g. Larner - a memory map of known defective locations for specific segments is maintained as a record in non-volatile memory and also in RAM. The memory map is referenced through one of the parameters, which are updated in RAM in column 6, lines 1-9 and the use of pointers are specified to identify locations in non-volatile memory in column 3, lines 54 to 56).

As for Claim 18, Larner teaches:

A method for reconstructing administrative data records relating to a nonvolatile memory that can be written in units of sectors and erased in units of blocks, said administrative data records being stored in an internal volatile flag memory of an assigned memory controller (See e.g. Larner – Abstract), the method comprising the steps of:

setting up, in one or more memory blocks of the nonvolatile memory, a contiguous reconstruction table for optimized for storing administrative memory data (RKT), said reconstruction table comprising at least one entry, said at least one entry being one sector or one sector segment long (See e.g. Lamer - as parameters that are contiguously stored in nonvolatile memory containing an identification field with the first two bits of which specifying the length of the data field, and an optional second field specifying data field length, and the actual data field in column 2, lines 45 to 60, as stored in non-volatile memory. Each parameter representing a data record with two or three fields per record, and by contiguously storing the parameters thereby creating a table of records. This table is purposefully used in the advent of power failure to reconstruct in RAM: the locations of data in nonvolatile memory, or to reconstruct the locations of data in nonvolatile memory for recovery to RAM and the recovery of data to RAM. Furthermore Larner teaches that the data structure may incorporate the use of pointers or references and/or the use of a lookup/hash table in column 3, lines 54 to 64. This data structure would be used for reconstruction of information due to power failure. column 3, lines 59-62 and also details working with segments as for example in column 1, starting on line 47-58),

continually updating the reconstruction table in the nonvolatile memory with administrative data records relating to all write and erase operations in the internal volatile flag memory (See e.g. Larner- as a parameter is updated or each time a new segment is written the parameter with its latest value is written to non-volatile memory in column 4, lines 16 to 18), the step of continually updating comprising recording all

information with which the administrative data records of the internal volatile flag memory of the memory controller can be completely reconstructed during a restart after a power failure (See e.g. Larner - as each time a segment becomes full, or when a predetermined threshold is reached, the most recent values as stored in RAM are copied into an unused segment of non-volatile memory in column 4, lines 1 to 6, and as a parameter is updated or each time a new segment is written the parameter with its latest value is written to non-volatile memory in column 4, lines 16 to 18. These parameters are used to reconstruct in RAM the layout of the nonvolatile memory storage in column 4, lines 13 to 39),

starting a reorganization of the internal volatile flag memory when a predefined fill level of the reconstruction table (RKT) is reached, to create a defined initial state of the administrative data records in the internal volatile flag memory and in the reconstruction table (RKT) (See e.g. Larner - as segments that contain reconstruction information for defining an initial state of memory become full or reach a predetermined threshold they are recycled, and updates of both written and erased data are reorganized and stored in a nonvolatile memory from column 3, line 66 to column 4, line 27 and col. 4, lines 40-65).

Larner does not expressly teach an OE and an FE. However, Sorenson teaches recording the start of the reconstruction as a last entry (OE) in the reconstruction table (See e.g. Sorenson – col. 6, lines 8-25 – rollbacks in progress and col. 7, lines 8-20) and

recording a completion entry (FE) into the reconstruction table every time the reconstruction was successful (See e.g. Sorenson – col. 6, lines 8-25 – last P-SAVE).

Sorenson also teaches continuously updating records of transactions in an audit trail block in memory (See e.g. Sorenson – Figures 5B and 5C). Audit block is cleared when a P_SAVE is made (See e.g. col. 5, lines 35-60). Periodic P-SAVES are made based on programmer criteria including number of transactions in the audit trail (See e.g. Sorenson - col. 5, lines 45-55).

Larner and Sorenson are from the analogous art of data backup and reconstruction. It would have been obvious to one of ordinary skill in the art at the time the invention was made having the teachings of Larner and Sorenson to have combined Larner and Sorenson. The motivation to combine Larner and Sorenson is to provide further details about the backing up of data. Both provide reconstruction and recovery after a power failure. Both log all writes and erases of data to a special section of memory. Sorenson more fully describes the data written to non-volatile memory with is P-SAVES in addition to the audit trail records. It would have been obvious to one skilled in the art to combine Larner and Sorenson.

As for Claim 19, Larner as modified by Sorenson teaches parent Claim 18. Larner also teaches further comprising a step of repeating the reorganization of the administrative data records of the internal volatile flag memory if another power failure has occurred during the reorganization of the data records (See e.g. Larner - as in the event of power failure provision is made to ensure that no data is lost during the transfer

of data from one memory segment to another or during the writing of data in column 2, line 40 and from column 4, line 58 to column 5, line 22, where the recovery of RAM memory from nonvolatile memory is detailed) .

As for Claim 20, Larner as modified by Sorenson teaches parent Claim 18. Larner also teaches wherein the completion entry containing a counter (FZ), which is incremented with every completion entry (See e.g. Larner - as a reorganization counter in column 4, on lines 52 – 56 and the first entry (the counter) serves a dual purpose. In addition to counting, the first value of the segment is examined if the value is other than FFFF then the segment is complete and valid. In the event more than one segment contains an entry the lower segment is selected. These completion determinations are based on the first entry in the table from column 4, line 64 to column 5, line 11. Note that the Applicant's specification also relies on the counter in the exact same way as Larner in the event of a power failure). Sorenson also teaches time stamps for P-SAVES and identifying information for previous save (See e.g. Sorenson- col. 6, lines 8-20).

As for Claim 21, Larner as modified by Sorenson teaches parent Claims 18 and 20. Larner also teaches further comprising for a renewed creation of the reconstruction table (RKT) after a successful reorganization and releasing previously used memory blocks for erasing in a background program and initializing the erased blocks accordingly (See e.g. Larner - as previously used memory blocks are erased and

reused in column 4, lines 1-12, and that these memory areas are initialized as exemplified in column 2, lines 29-31). Sorenson also teaches deleting steps from the audit trail (See e.g. Sorenson – claim 20)

As for Claim 22, Larner as modified by Sorenson teaches parent Claims 18 and 20-21. Sorenson also teaches wherein the first entry in the reconstruction table (RKT) is a completion entry (FE) (See e.g. Sorenson – Figures 5B and 5C and col. 7, lines 4-7 - last P-SAVE is record in audit trail and starting point for recovery).

As for Claim 23, Larner as modified by Sorenson teaches parent Claim 18. Larner also teaches further comprising maintaining an intermediate point table (ZZT) as a portion of the administrative data records, in the internal volatile flag memory, for any invalid block pointers that are contained in a block pointer table (BZT) in the nonvolatile memory (See e.g. Larner - a memory map of known defective locations for specific segments is maintained as a record in non-volatile memory and also in RAM in column 6, lines 1-9 and the use of pointers to identify locations in non-volatile memory in column 3, lines 54 to 56).

As for Claim 24, Larner as modified by Sorenson teaches parent Claims 18 and 23. Larner also teaches wherein, during the reorganization, invalid block pointers in the block pointer table (BZT) are updated with the values of the intermediate point table (ZZT) (See e.g. Larner - a memory map of known defective locations for specific

segments is maintained as a record in non-volatile memory and also in RAM. The memory map is referenced through one of the parameters, which are updated in RAM in column 6, lines 1-9 and the use of pointers are specified to identify locations in non-volatile memory in column 3, lines 54 to 56).

Response to Arguments

6. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christyann RF Pulliam whose telephone number is (571)270-1007. The examiner can normally be reached on M-F 9 am-6 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christian Chace can be reached on 571-272-4190. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. R. P./
Examiner, Art Unit 2165
August 15, 2008

/Neveen Abel-Jalil/
Primary Examiner, Art Unit 2165